# APPENDIX C
# NOISE MEASUREMENTS

## C-1 PURPOSE

While FAA Order 1050.1E requires that the evaluation of aircraft noise be conducted based on approved computer noise model calculations, it is valuable to consider the noise modeling results in the context of the local ambient noise environment. To that end, a field noise measurement program was conducted at select sites throughout the MAP study to provide a sample of ambient and cumulative noise values. The noise measurements contain all noise recorded at a site including aircraft and non-aircraft events.

The measurements serve the following purposes as a supplemental tool to noise modeling:

- Quantify existing ambient noise levels that include all non-aircraft sources, as well as non-modeled aircraft sources.
- Provide a noise context related to existing noise exposure and the potential cumulative effect an airspace change may have upon that environment.
- Provide a supplemental method to noise modeling by which all aircraft traffic (including both VFR and IFR traffic) are considered.

## C-2 DATA COLLECTION

After the sites were surveyed and located, the noise measurement program was initiated starting September 29th and ending October 10th of 2003. Noise was measured at 20 sites for continuous periods of approximately 48 hours. For 16 of these sites, personnel were also in the field for three to seven hours recording a log of observations. Logistical constraints prevented observations from being recorded at the other four sites.

Measurements at all sites were conducted with Larson-Davis Model 824 noise monitors. These monitors are highly sensitive and precise scientific instruments that meet American National Standards Institute (ANSI) S1.4-1983 standards for Type 1 sound level meters. The kit utilized was portable and capable of long-term unattended operation. Each monitor was programmed to record Leq one-second time-histories in A-weighted decibels which could be used in post-processing analysis to compute a variety of noise metrics for the site. During setup and breakdown, each monitor was acoustically calibrated and time synchronized to the U.S. Naval Observatory Master Clock.

Observations at all 20 sites involved logging aircraft and non-aircraft events that were audible. The observer logged the time in hours, minutes and seconds when each event started and ended. If aircraft events were detected, the observer attempted to visually site the aircraft and provided any characteristics of the aircraft event (i.e. aircraft type, operation mode, direction of flight, etc.). The time stamps were taken from either the monitor clock or a personal watch that was calibrated to the U.S. Naval Observatory Master Clock.

# C-3 MEASUREMENT SITES

While there is no end to the number of potential noise measurement sites, issues such as cost and time often create a practical limit to the scope of any noise measurement program. Consequently, the noise measurement program focused on collecting a sample of data within strategic areas that were directly related to the range of alternatives evaluated and the local land uses within the MAP study area.

This section summarizes the selection criteria used to choose the sites and a brief description of each site that was selected. The description includes the location, the environment around the site, site observations, cumulative noise levels measured at the site, and statistics related to aircraft noise at the site.

## C-3-1 Selection Criteria

Key components used in evaluating site locations included:

- New areas that will could potentially be over-flown with regard to each of the project alternatives;
- Areas that have existing overflights, where the traffic volume may change based on the various project alternatives;
- Noise sensitive and/or 4f/historic sites that are not now overflown or where traffic volume may change based on the various project alternatives;
- Typical traffic patterns flown by uncontrolled-VFR operations to/from local airports (typically low-traffic facilities) within the study area;
- Ability to provide a wide range of analysis across the project study area;
- Public input.

## C-3-2 Site Descriptions and Locations

Exhibit C-1 illustrates the locations of all the sites on a map of the area. Individual descriptions that include more information regarding location, study area position, and land use type are provided in the subsequent paragraphs. Some of the measurement results statistics are included in each description to provide an understanding of the variance in noise exposure at each site. In some cases, analysis of the site data in conjunction with the site observations revealed the presence of unusual noise events. In cases where these events appeared to be anomalies (e.g. lawn mowers), they were mathematically removed from the analysis. These cases are noted as necessary in each of the site discussions.

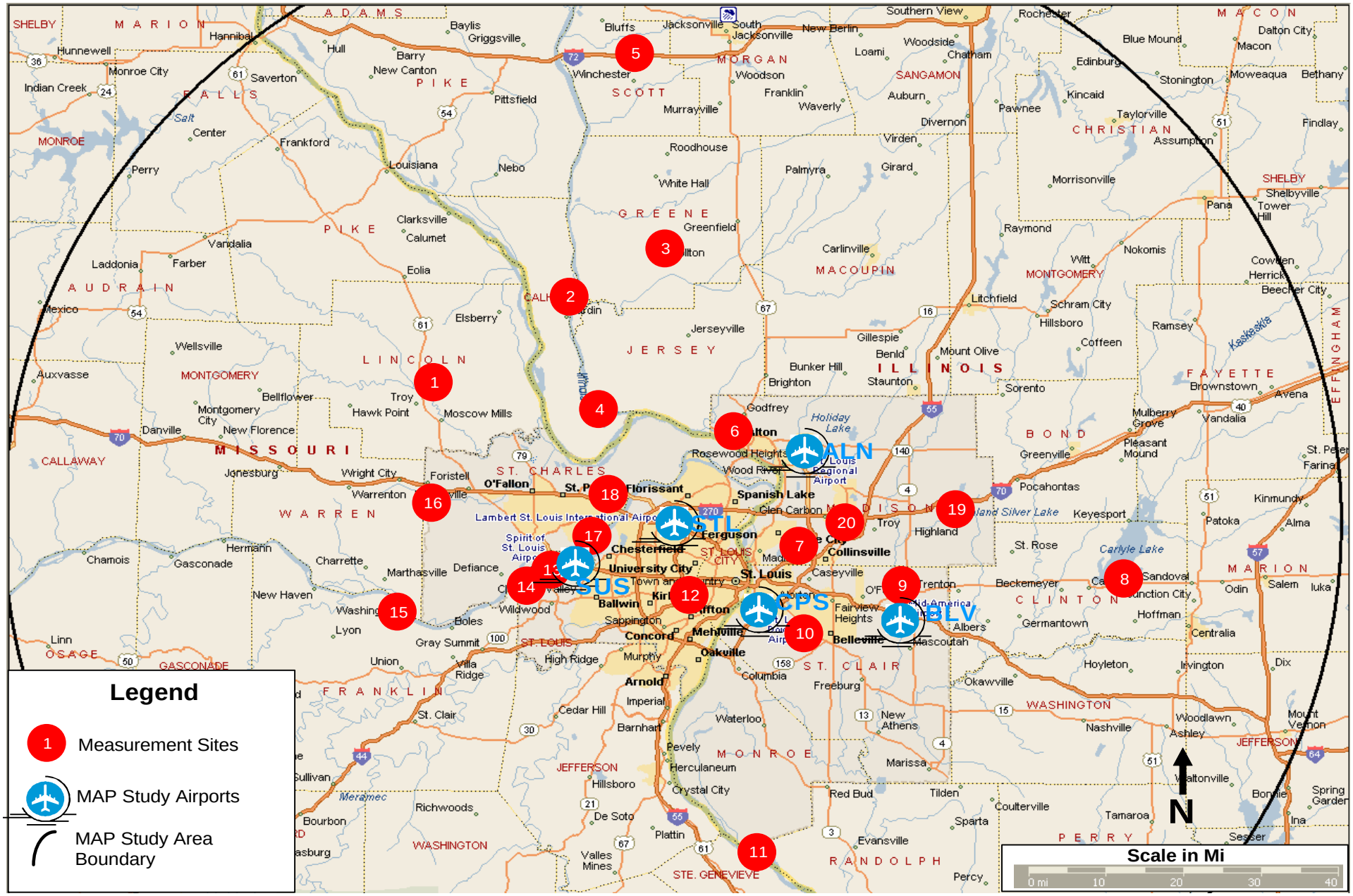



Exhibit C-1 Noise Measurement Site Locations

**Site 1 – Cuivre River State Park (Troy, MO)**

Site 1 was located in Cuivre River State Park in the area of Troy, Missouri. This is a rural area approximately 37 miles northwest of Lambert Airport, approximately 2 miles east of US highway 61. Measurements were conducted between Monday 10/6/03 and Wednesday 10/8/03. Ambient noise levels typically ranged from 39 to 45 dBA with wildlife being the main source, although consistent road noise was occasionally audible to the southwest. A high concentration of insects and birds was noted. The first day of measurements produced a DNL of 52.5.

This site was selected because of its proximity to current departure routes, and its sensitivity to noise. During 5.4 hours of observation, 32 jet and 11 propeller aircraft were observed. The loudest observed aircraft reached a maximum sound level of 57.3 dBA.

**Site 2 – Godar-Diamond Wildlife Management Area (Hardin, IL)**

Site 2 was located in the Godar-Diamond Wildlife Management Area near Hardin, Illinois. This is a rural area approximately 34 miles north-northwest of Lambert Airport, adjacent to and east of Illinois State Highway 101. Measurements were conducted between Wednesday 10/1/03 and Friday 10/3/03. Ambient noise levels typically ranged from 37 to 41 dBA with insect noise and low volume vehicular traffic being the main sources. The first day of measurements produced a DNL of 53.3. During the measurement period there was a 40 minute period of field mowing that occurred immediately adjacent to the measurement equipment. Noise levels during this period often reached and exceeded 70dBA and were dramatically higher than levels recorded during the remainder of the measurement period. The mowing event was removed from the noise data for the final measurement analysis.

This site was selected because it is in the vicinity of proposed changes to arrival and departure routes. Also the wildlife management area is sensitive to noise During 3.0 hours of observation, 4 jet and 3 propeller aircraft were observed. The loudest observed aircraft reached a maximum sound level of 60.6 dBA.

**Site 3 – Green County Fairgrounds (Carrolton, IL)**

Site 3 was located in the Green County Fairgrounds near Carrolton, IL. This is a rural area approximately 38 miles north of Lambert Airport, adjacent to, and south of Illinois State Highway 108.

The monitor was placed on the west side of the fairgrounds. Measurements were conducted between Monday 9/29/03 and Wednesday 10/1/03. Ambient noise levels were typically between 42 to 47 dBA with birds, insects, farm equipment, wind, and auto traffic on Highway 108 all noted as sources. The second day of measurements produced a DNL of 54.0.

This site was selected because it is in the vicinity of proposed changes to arrival routes. During 4.0 hours of observation, 5 jet, 3 propeller, and 1 unknown aircraft were observed. The loudest observed aircraft reached a maximum sound level of 56.2 dBA.

**Site 4 – Pere Marquette State Park (Fulkerson Landing, IL)**

Site 4 was located in Illinois' Pere Marquette State Park, approximately 18 miles north-northwest of Lambert Airport, just northeast of Illinois State Highway 100. The monitor was placed in the southwest corner of the park in a field behind the visitor center. Measurements were conducted between Wednesday 10/1/03 and Friday 10/3/03. Ambient noise levels were typically between 37 and 43 dBA with wind, birds, insects, and traffic on highway 100 all noted as sources. The second day of measurements produced a DNL of 48.9.

This site was selected because it is in an area expected to have concentrated VFR traffic, mainly from Saint Charles County Airport, located approximately 7 miles east-southeast of the site. Also the site is in proximity to proposed changes for arrivals, and the state park is a sensitive noise area. During 4.2 hours of observation, 28 jet, 7 propeller, and 1 unknown aircraft were observed. The loudest observed aircraft reached a maximum sound level of 62.7 dBA.

**Site 5 – Ebaugh County Park (Riggston, IL)**

Site 5 was located in Ebaugh County Park near Riggston, Illinois. This is a rural area approximately 65 miles north of Lambert Airport, just north of Interstate 72 and west of Illinois State Highway 757. The monitor was placed near a gravel road in a central location of the park, bordering a wooded area.

Measurements were conducted between Monday 9/29/03 and Wednesday 10/1/03. Ambient noise levels were typically between 45 and 51 dBA with automobile traffic on I-72 and highway 757, birds, and insects noted as sources. The second day of measurements produced a DNL of 54.9.

This site was selected because it is in the vicinity of proposed changes to arrival routes, and because VFR traffic was possible from the airports in Pittsfield, IL and Jacksonville, IL. During 4.5 hours of observation, 11 jet and 3 propeller aircraft were observed. The loudest observed aircraft reached a maximum sound level of 57.8 dBA.

**Site 6 – Private Residence (Godfrey, IL)**

Site 6 was located at a private residence in the town of Godfrey, Illinois, just west of Alton, Illinois. The home was located in a low-density residential area, just south W Delmar Ave, approximately 14 miles north-northeast of Lambert Airport.

Measurements were conducted between Friday 10/3/03 and Monday 10/6/03. Ambient noise levels were typically between 41 and 45 dBA, although there were also prolonged periods with ambient levels between 49 and 51 dBA. The louder ambient levels occurred in the evening and were likely caused by insects in the wooded area near the monitor. The second day of measurements produced a DNL of 56.3. During the measurement period, there was a 36 minute time interval where the noise data indicated a pattern consistent with lawn mowing near the equipment. The noise levels during this period exceeded 80dBA and were not characteristic of aircraft overflight events. This data was removed from the noise data for the final measurement analysis.

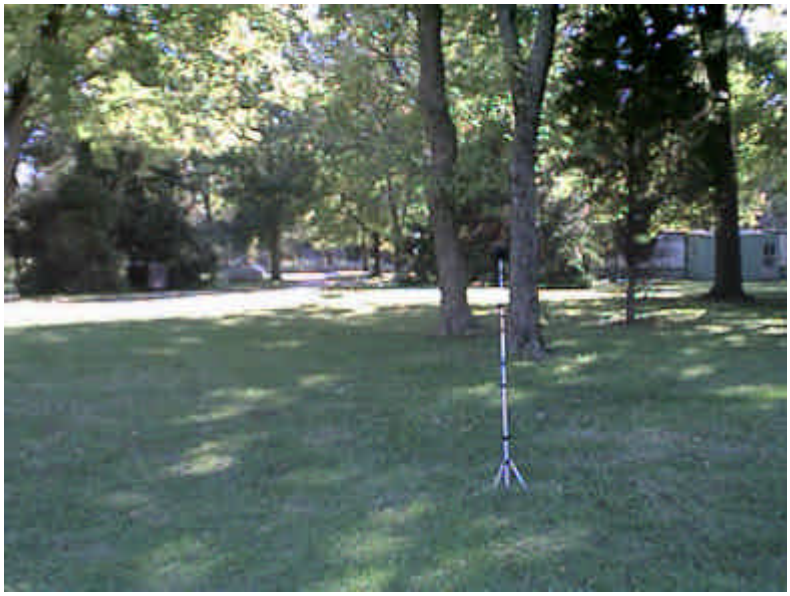
This site was selected because it is in the vicinity of multiple proposed changes to departure routes, and because it is in an area of dense VFR traffic. Logged observations were not made at this site.

**Site 7 – Horseshoe Lake State Park (Granite City, IL)**

Site 7 was located in Horseshoe Lake State Park near Granite City, Illinois. This is a rural area approximately 16 miles east-southeast of Lambert Airport, adjacent to Illinois State Highway 111, and within 3 miles of both Interstate 255 and Interstate 55. The monitor was placed near the park's administrative building, on the east side of the park. Measurements were conducted between Wednesday 10/1/03 and Friday 10/3/03. Ambient noise levels were typically between 53 and 58 dBA with highway noise being the major contributor, but also some wildlife noted. During one period of observation, the grass was being mowed in a field adjacent to the monitor. The second day of measurements produced a DNL of 62.4. During the measurement period there was a 131 minute period of field mowing that was observed in the vicinity of the measurement equipment. Noise levels during this period varied, but often reached and exceeded 70dBA when the machinery was near the microphone. The levels during this period were also notably higher than levels recorded during the remainder of the measurement period. The mowing event was removed from the noise data for the final measurement analysis.

This site was selected because it is in the vicinity of proposed changes to departure routes, and because it was expected to be an area exposed to moderate VFR traffic. Also the state park is sensitive to noise. During 4.4 hours of observation, 46 jet, 5 propeller, and 2 helicopter aircraft were observed. The loudest observed aircraft reached a maximum sound level of 77.1 dBA.

**Site 8 – South Shore State Park (Carlyle, IL)**

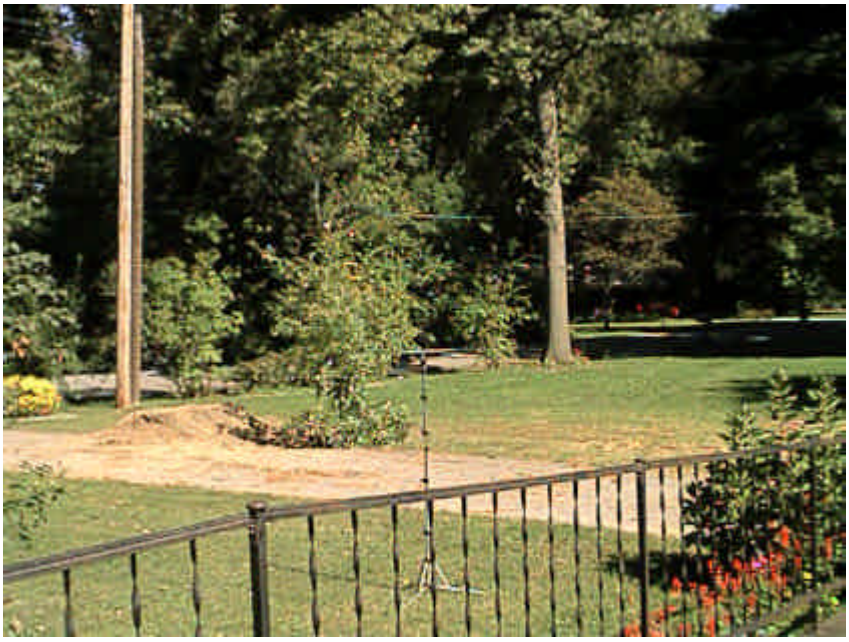


Site 8 was located in South Shore State Park, on the southeast shore of Carlyle Lake, near Carlyle, Illinois. This is a rural area approximately 58 miles east of Lambert Airport, approximately 1 mile north of US Highway 50. The monitor was placed in the eastern portion of the park, near a maintenance shed. Measurements were conducted between Monday 9/29/03 and Wednesday 10/1/03. Ambient noise levels on day 1 were typically between 42 and 44, but on day 2 ambient noise was between 36 and 40 dBA. Wildlife was noted as the main contributor to ambient noise levels, with a very small amount of noise attributable to highway US-50. The second day of measurements contained several erratic, but prolonged periods of higher noise, the source of which is unknown. The second day produced a DNL of 56.4.

This site was selected because it is in the vicinity proposed changes to departure routes, and its sensitivity to noise. During 6.0 hours of observation, 24 jet, 12 propeller, and 2 helicopter aircraft were observed. The loudest observed aircraft reached a maximum sound level of 68.8 dBA.

**Site 9 – Private Residence (Lebanon, IL)**

Site 9 was located at a private residence in northwest Lebanon, Illinois. The home was located on a suburban residential street, approximately 31 miles east-southeast of Lambert Airport, and approximately 5 miles north of Mid America Regional Airport. Measurements were conducted between Monday 9/29/03 and Wednesday 10/1/03. Ambient noise levels were typically between 37 and 41 dBA, with ambient sources being related to weather and wildlife. The second day of measurements produced a DNL of 51.1. During the measurement period there was a 108 minute period of field mowing that was observed in the vicinity of the measurement equipment. Noise levels during this period often reached and exceeded 70dBA when the mower was near the



microphone. The levels during this period were also notably higher than levels recorded during the remainder of the measurement period. The mowing event was removed from the noise data for the final measurement analysis.

This site was selected because it is in the vicinity of proposed changes to departure routes, and because it is in an area exposed to moderate VFR traffic. During 4.2 hours of observation, 32 jet, 6 propeller, and 1 unknown aircraft were observed. The loudest observed aircraft reached a maximum sound level of 67.3 dBA.

**Site 10 – Private Residence (Belleville, IL)**

Site 10 was located in at a private residence in Belleville, Illinois. The home was located in a low-density residential area on country road in western Belleville, about ½ mile southwest of Illinois State Highway 15. The site is approximately 23 miles southeast of Lambert Airport. Measurements were conducted between Friday 10/3/03 and Monday 10/6/03. Ambient noise levels were typically between 38 and 44 dBA. The second day of measurements produced a DNL of 55.2.

This site was selected because it is in an area of dense VFR traffic. Logged observations were not made at this site.

**Site 11 – Fort de Chartres State Historical Site (Prairie du Rocher, IL)**

Site 11 was located in Fort de Chartres State Historical site near Prairie du Rocher, Illinois. This is a rural area approximately 47 miles south-southeast of Lambert Airport, near the Mississippi River, approximately 1000 feet southwest of Illinois State Highway 155. Measurements were conducted between Monday 10/6/03 and Wednesday 10/8/03. Daytime ambient noise levels were typically between 49 and 52 dBA, whereas nighttime ambient levels were typically between 35 and 41. Locusts were noted as dominating the ambient noise at the site. On both days of observation there was occasional hammering and sawing near the site producing brief, erratic periods of high noise levels. The first day produced a DNL of 49.4.

This site was selected because it is in the vicinity of proposed airspace changes to arrival routes. During 4.0 hours of observation, 50 jet, 8 propeller, and 1 unknown aircraft were observed. The loudest observed aircraft reached a maximum sound level of 55.4 dBA.

**Site 12 – Private Residence (Webster Groves, MO)**

Site 12 was located at a private residence in the Webster Groves, Missouri. The home was located Suffolk Avenue on the edge of a high-density residential area, approximately 2000 feet north of Interstate 44. The site was approximately 10 miles south-southeast of Lambert airport. Measurements were conducted between Monday 10/6/03 and Wednesday 10/8/03. Ambient noise levels were typically between 54 and 59 dBA, with heavy traffic on I-44 dominating the ambient nose levels. The second day of measurements produced a DNL of 64.0. During the second day of the measurement period there was a 41 minute period of erratically high noise readings. The levels during the period exceeded 100 dBA several times indicating unusual events situated very close to the microphone. This was likely due to maintenance work in or near the storage sheds adjacent to the microphone location. These erratic noise readings were removed in the final data analysis.

This site was selected because it is in the vicinity of a VFR flyway, and because it is in the area of proposed changes to departure routes. During 4.1 hours of observation, 68 jet, 9 propeller, 1 helicopter, and 1 unknown aircraft were observed. There were 2 observations of clusters of military fighter jets flying over the sight. The loudest observed aircraft event was one such overflight of fighter jets which reached a maximum sound level of 79.6 dBA.

**Site 13 – Private Residence (Wildwood, MO)**

Site 13 was located at a private residence in the Wildwood, Missouri. The home was located on Wildhorse Canyon Drive in a wooded area, approximately 2 miles south of US Highway 40. The site was approximately 18 miles southwest of Lambert Airport, and 1 mile southwest of Spirit of Saint Louis Airport. Measurements were conducted between Wednesday 10/8/03 and Friday 10/10/03. Ambient noise levels were typically between 49 and 55 dBA, with wildlife sources being the main contributors. The first day of measurements produced a DNL of 60.5.

This site was selected because of its proximity to VFR traffic, and because it is in an area proposed changes to departure routes. During 3.0 hours of observation, 18 jet and 4 propeller aircraft were observed. The loudest observed aircraft event reached a maximum sound level of 68.4 dBA.

**Site 14 – Babler State Park (Wildwood, MO)**

Site 14 was located in Babler State Park in the area of Wildwood, MO. This is a wooded, rural area approximately 20 miles west-southwest of Lambert airport, and 3 miles southwest of Spirit of Saint Louis Airport. The monitor was placed in a central location in the park. Measurements were conducted between Wednesday 10/8/03 and Friday 10/10/03. Ambient noise levels were typically between 39 and 42 dBA, but day 1 experienced higher nighttime ambient levels between 51 and 54 dBA. Insects were noted as the major contributor to ambient noise. The first day of measurements produced a DNL of 58.7.

This site was selected because of the dense VFR traffic in the area, its vicinity to proposed changes of departure and arrival routes, and its sensitivity to noise. During 4.8 hours of observation, 36 jet and 25 propeller aircraft were observed. The loudest observed aircraft reached a maximum sound level of 69.4 dBA.

**Site 15 – Washington City Park (Washington, MO)**

Site 15 was located in Washington City Park in the Washington, MO. The park is adjacent to residential neighborhood, and is approximately 1500 feet south of the Missouri River, and 500 feet south of a fairly busy railroad track. This location is approximately 37 miles west-southwest of Lambert Airport. The monitor was placed on a baseball field in the northeast section of the park. Measurements were conducted between Wednesday 10/8/03 and Friday 10/10/03. Ambient noise levels were typically between 42 and 46 dBA. Weather, wildlife, and occasional activity in the park were the main contributors to the ambient noise levels. The major contributor to cumulative sound levels at this site was train activity. Trains came through both day and night with an average frequency of over 1 per hour, often producing a maximum sound level of over 70 dBA. The second day of measurements produced a DNL of 62.7.

This site was selected because of the dense VFR traffic in the area, and its vicinity to proposed changes of arrival routes. During 4.3 hours of observation, 19 jet, 13 propeller, and 1 helicopter aircraft were observed. The loudest observed aircraft was the helicopter reaching a maximum sound level of 81.8 dBA. The second loudest observed aircraft had a maximum sound level of 60.1 dBA.

**Site 16 – Private Residence (Foristell, MO)**

Site 16 was located at a private residence in the area of Foristell, Missouri. The home was located on Schaper Road in a rural residential area, approximately 2 miles south of Interstate 70 Highway. The site was approximately 31 miles west of Lambert Airport. There was a private airstrip on the property, which was used for departure once during observations. Measurements were conducted between Monday 10/6/03 and Wednesday 10/8/03. Ambient noise levels were typically between 38 and 44 dBA, with wildlife being the only noted source. The first day of measurements produced a DNL of 50.5. During the measurement period there was an extended period of unusually high noise readings over several hours. An analysis of these readings revealed an oscillating pattern of noise that is characteristic of a lawn mower periodically passing the microphone as a large area was being mowed. The noise levels associated with this phenomenon were removed from the final analysis.

This site was selected because of its proximity to VFR traffic, and because it is in the vicinity of proposed changes of departure routes. During 5.4 hours of observation, 29 jet and 23 propeller aircraft were observed. The loudest observed aircraft event reached a maximum sound level of 74 dBA.

**Site 17 – Private Residence (Saint Charles, MO)**

Site 17 was located at a private residence in Saint Charles, Missouri. The home was located on Bluff View Drive on the southern edge of a residential area, bordering the Katy Trail and Greens Bottom Road. The site was approximately 10 miles west-southwest of Lambert Airport. Measurements were conducted between Friday 10/3/03 and Monday 10/6/03. Ambient noise levels were typically between 43 and 48 dBA. The second day of measurements produced a DNL of 55.0.

This site was selected because of its proximity to VFR traffic, and because it is in the vicinity of proposed changes to departure routes. Logged observations were not made at this site.

**Site 18 – Private Residence (Saint Charles, MO)**

Site 18 was located at a private residence in northern Saint Charles, Missouri. The home was in a suburban residential area, approximately 1.25 miles north of Interstate 70, and 2.5 miles west of the Missouri River. The site was approximately 8 miles west-northwest of Lambert Airport. Measurements were conducted between Wednesday 10/8/03 and Friday 10/10/03. Ambient noise levels were typically between 47 and 52 dBA, with weather and wildlife being the only noted sources. The first day of measurements produced a DNL of 59.3. During the second day of measurements a period of four minutes of extremely high noise readings was recorded. These readings ranged as high as 108 dBA during the brief period. While the source of these readings is uncertain, it is possible that the microphones proximity to the driveway may have picked up a car or truck running in the driveway for a four minute period. This period of recorded levels was removed for the final noise summary analysis.

This site was selected because of its proximity to VFR traffic, and because it is in the vicinity of proposed changes of departure routes. During 4.4 hours of observation, 155 jet and 30 propeller aircraft were observed, mostly arrivals to Lambert Airport. The loudest observed aircraft event reached a maximum sound level of 77.7 dBA.

**Site 19 – Silver Lake Park (Highland, IL)**

Site 19 was located in Silver Lake Park in Highland, Illinois. This is a local park on the southeast bank of Silver Lake in a rural area, approximately 1 mile south of Interstate 70. The site was approximately 36 miles east of Lambert Airport. Measurements were conducted between Friday 10/3/03 and Monday 10/6/03. Ambient noise levels were typically between 45 and 51 dBA. The second day of measurements produced a DNL of 54.1. During the first day of the monitoring period there were unusually high (above 80 dBA) readings for nearly 5 hours. While the source of these readings is uncertain, they are in sharp contrast to the readings typified in the remainder of the measurement periods and are not characteristic of aircraft operations. For purposes of the summary analysis, these events were removed from the data.

This site was selected primarily because of its proximity to VFR traffic. Logged observations were not made at this site.

**Site 20 – Private Residence (Glen Carbon, IL)**

Site 20 was located at a private residence in Glen Carbon, Illinois. The home was located on a private lane in a wooded residential area approximately 1/2 mile south of Interstate 270, and about 500 feet east of Illinois State Highway 159. The site was approximately 21 miles east of Lambert Airport. Measurements were conducted between Wednesday 10/1/03 and Friday 10/3/03. Day 1 ambient noise levels were in the range of 52 to 56 dBA, whereas day 2 ambient noise levels were in the range of 48 to 52 dBA. The major contributors to ambient noise levels were constant automobile noise from I-270 and wildlife. It is expected that insect activity was the source of the difference between day 1 and day 2 ambient levels. The first day of measurements produced a DNL of 60.4.

This site was selected because of its proximity to VFR traffic, and because it is in the vicinity of proposed changes of departure routes. During 7.0 hours of observation, 44 jet, 34 propeller, and 1 helicopter aircraft were observed. The loudest observed aircraft was the helicopter reaching a maximum sound level of 74.7 dBA. The second loudest observed aircraft had a maximum sound level of 69.8 dBA.

## C-4 NOISE MEASUREMENT RESULTS

**Table C-1**, provides a summary of the noise levels recorded during the measurement period for each site. The data for each site is presented in terms of the DNL values for each individual measurement day as well as the cumulative DNL value for the entire measurement duration at the site. Similarly, the $L_{50}$ values for each site are also presented.

**TABLE C-1 NOISE MEASUREMENT SUMMARY**

| | MEASURED DNL | | | MEASURED $L_{50}$ | | |
|---|---|---|---|---|---|---|
| Site # | Day 1 | Day 2 | Total | Day 1 | Day 2 | Total |
| 01 | 52.5 | 52.3 | 52.4 | 42.6 | 43.5 | 43.1 |
| 02 | 53.3* | 53.1 | 53.2 | 42.6 | 42.2 | 42.4 |
| 03 | 53.0 | 54.0 | 53.5 | 45.6 | 44.2 | 44.7 |
| 04 | 48.4 | 48.9 | 48.7 | 40.4 | 40.1 | 40.2 |
| 05 | 54.8 | 54.9 | 54.9 | 48.4 | 47.1 | 47.6 |
| 06 | 52.9 | 56.3* | 54.9 | 44.1 | 48.5 | 45.9 |
| 07 | 60.3* | 62.4 | 61.5 | 53.1 | 53.3 | 53.2 |
| 08 | 50.6 | 56.4 | 54.4 | 41.3 | 39.6 | 40.5 |
| 09 | 50.0* | 51.1* | 50.6 | 42.1 | 40.2 | 41.2 |
| 10 | 51.0 | 55.2 | 53.6 | 42.1 | 43.5 | 42.5 |
| 11 | 49.4 | 49.1 | 49.3 | 44.7 | 43.9 | 44.2 |
| 12 | 63.0 | 64.0* | 63.5 | 55.3 | 56.2 | 55.7 |
| 13 | 60.5 | 59.7 | 60.1 | 52.3 | 50.8 | 51.6 |
| 14 | 58.7 | 50.6 | 56.3 | 51.2 | 41.1 | 44.3 |
| 15 | 61.3 | 62.7 | 62.0 | 45.0 | 43.8 | 44.6 |
| 16 | 50.5* | 48.7* | 49.7 | 41.0 | 41.4 | 41.2 |
| 17 | 53.1 | 55.0 | 54.1 | 44.6 | 46.6 | 45.7 |
| 18 | 59.3 | 56.1* | 58.0 | 50.7 | 48.1 | 49.8 |
| 19 | 52.3* | 54.1 | 53.3 | 46.0 | 48.8 | 47.3 |
| 20 | 60.4 | 54.1 | 58.3 | 52.8 | 48.2 | 50.6 |

* Denotes values where anomalous noise events were removed.

**Table C-2**, presents a summary of the noise levels associated with the observed aircraft events for each measurement site. The duration of the observations, the number of aircraft events, and the range of the maximum aircraft noise levels are presented along with the average noise values. The time and duration of each aircraft event was used to separate out the aircraft noise from other noise recorded during each observation period. This allowed for the calculation of the average noise levels associated with only the aircraft events for comparison against the average levels from other sources during the observation periods.

## TABLE C-2 OBSERVED AIRCRAFT NOISE SUMMARY

| Site | Observation Duration (hrs) | No. of Aircraft Observed | Aircraft $L_{MAX}$ Range (dBA) | Aircraft Leq (dBA) | Non Aircraft Leq (dBA) | Total Leq (dBA) |
|---|---|---|---|---|---|---|
| 01 | 5.4 | 43 | 40.7 - 57.3 | 36.1 | 42.3 | 43.2 |
| 02 | 3.0 | 7 | 46.1 - 60.6 | 35.1 | 51.7 | 51.8 |
| 03 | 4.0 | 9 | 46.4 - 56.2 | 33.8 | 49.4 | 49.6 |
| 04 | 4.2 | 36 | 43.0 - 62.7 | 37.7 | 45.0 | 45.7 |
| 05 | 4.5 | 14 | 48.8 - 57.8 | 37.2 | 49.3 | 49.6 |
| 06 | 0.0 | 0 | n/a | n/a | n/a | n/a |
| 07 | 4.4 | 53 | 51.0 - 77.1 | 51.9 | 57.6 | 58.7 |
| 08 | 6.0 | 38 | 39.6 - 68.8 | 42.6 | 45.0 | 47.0 |
| 09 | 4.2 | 39 | 41.5 - 67.3 | 42.6 | 48.2 | 49.3 |
| 10 | 0.0 | 0 | n/a | n/a | n/a | n/a |
| 11 | 4.0 | 59 | 48.7 - 55.4 | 47.1 | 47.5 | 50.4 |
| 12 | 4.1 | 79 | 53.1 - 79.6 | 55.9 | 54.2 | 58.1 |
| 13 | 3.0 | 22 | 51.5 - 68.4 | 49.2 | 59.7 | 60.0 |
| 14 | 4.8 | 61 | 36.1 - 69.4 | 48.2 | 59.4 | 59.8 |
| 15 | 4.3 | 33 | 45.1 - 81.8 | 48.8 | 52.3 | 53.9 |
| 16 | 5.4 | 52 | 38.6 - 74.0 | 42.2 | 43.0 | 45.6 |
| 17 | 0.0 | 0 | n/a | n/a | n/a | n/a |
| 18 | 4.4 | 185 | 45.9 - 77.7 | 49.7 | 44.4 | 50.8 |
| 19 | 0.0 | 0 | n/a | n/a | n/a | n/a |
| 20 | 7.0 | 79 | 47.7 - 74.7 | 48.6 | 51.7 | 53.4 |